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ABSTRACT

The effects of conditions of informed consent and disclosure on the performance of 84 students doing a statistics laboratory assignment for an introductory graduate course in statistics at a state university in the southeast were studied. Four separate classes taught by three instructors were included. Subjects ranged in age from 22 to 47 years, with a modal age range of 22 to 25 years. The sample was about half male and half female. The independent variables were disclosure (partial, deception, and none) and consent (requested and not requested). The dependent variables were: (1) the number of paragraphs completed in a statistics laboratory assignment; and (2) the number of questions answered correctly in a quiz on the material covered in the laboratory assignment. Subjects were randomly assigned to one of three disclosure conditions and one of two consent conditions. Three subjects from the group from which consent was asked did not indicate a willingness to participate; their data were not included in the analysis. There was no relationship between the level of disclosure and consent obtained from the subjects. Multivariate analysis of variance revealed no significant main effects or interactions of consent and disclosure. It is concluded that informing subjects that they were participating in an experiment and asking for consent did not affect their performance as subjects contrary to what would normally be expected. Two data tables are included. (TJH)

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Informed Consent, Disclosure, and Performance of Human Research Subjects

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Abstract

The effects of conditions of informed consent and disclosure on the performance of 84 students doing a statistics laboratory assignment for an introductory statistics course were studied. The independent variables were disclosure (partial, deception, and none), and consent (asked for and not asked for). The dependent variables were (1) the number of paragraphs completed in a statistics laboratory assignment and (2) the number of questions answered correctly in a quiz on the material covered in the laboratory assignment. There was no relationship between level of disclosure and consent being obtained from the subjects. Multivariate analysis of variance revealed no significant main effects or interaction of consent and disclosure. It was concluded that informing subjects that they were participating in an experiment and asking for their consent did not affect their performance as subjects, contrary to what would normally be expected.

Informed Consent and Disclosure in Studies with Human Subjects

There has been a marked increase in awareness of ethical responsibilities of psychologist researchers toward their subjects in recent years. For example, the 1967 edition of Casebook of Ethical Standards for Psychologists (American Psychological Association) had only one principle which dealt with ethics in research. This principle stated that the psychologist must assume responsibility for the welfare of animal and human research subjects. However, recently more detailed descriptions of the ethical responsibilities of researchers toward their subjects have been provided by research funding agencies (e.g., DHEW, 1971) and the American Psychological Association (1972). Applicants for research funds are now required to follow certain prescribed procedures to insure that subjects are willing to participate in the research, that their rights to privacy and confidentiality will not be violated, that the subjects provide "informed consent," and that their welfare will be protected. This implies that subjects would know all about the purpose and procedures of an experiment before they consent to participate. The requirements for disclosure of information about a study to subjects prior to conducting the study has been generally recognized as good ethically but poor experimentally by the research community. Generally, researchers who utilize human subjects have feared that if the subjects have detailed knowledge about the experimental hypotheses and conditions, their behavior during the experiment will be affected. However, Gergen (1973) has suggested that

informed consent may have no effect on subjects in experiments, and emphasized the need for research in this area.

The social psychology of human experimentation is felt to be extremely complex. For example, Rosenberg (1969) wrote of evaluation apprehension contaminating results. Orne (1962) warned of the demand effects perceived by human subjects in experiments. The experimenter bias effect (EBE) and other kinds of problems have been identified (Friedman, 1967; Rosenthal & Rosnow, 1969). According to Sullivan and Dieker (1973), psychologists take their responsibilities toward their subjects seriously, at least more seriously than do their psychology students, and try to meet their ethical obligations toward people who agree to participate in their research.

There seems to be some grounds for the fears of behavioral researchers of full disclosure. For example, Resnick and Schwartz (1973) have demonstrated devastating effects of full disclosure upon experimental results. One way to deal with this kind of problem has been to provide deceptive or inaccurate information to subjects (Menges, 1973). Presumably, the required full disclosure will come after the experimental procedures have been completed. The cases for and against deception have been strongly made. For example, Forward, Center, and Kirsch (1976) have argued that evaluation apprehension and the tendency for human subjects to try to do what they are expected to do (see Orne, 1962) are the results of deceptive experimental procedures. They would prefer to see subjects role play under conditions of full disclosure and consent. On the other hand, Cooper (1976) has argued that deception methods are useful in some cases and should be considered part of the variety of choices a researcher must make in

designing experiments.

Differences between volunteer and non-volunteer subjects in research studies have been investigated (see, for example, Bell, 1962; Howe, 1960). These differences are important because subjects who provide consent, in a sense, are volunteers. Berscheid, Baron, Dermer, and Libman (1973) reported results suggesting that the population of subjects for experiments involving stress could be more affectd by obtaining informed consent than would be the case in non-stressful experiments.

The present study was designed to investigate the effects of disclosure and informed consent upon the performance of experimental subjects. Specifically, the following questions were addressed:

1. Would presenting different conditions of disclosure about the experiment (limited information, deception, and no information) to subjects have differential affects on their performance?
2. Would subjects who consented to participate in the research perform differently than those who were not asked to consent?

Methods

Subjects

Eighty-four students enrolled in an introductory graduate course in statistics at a state university in the southeast were subjects in the present study. Four separate class sections taught by three different instructors were employed. Each instructor commonly used in-class statistical assignments called laboratory exercises to practice material illustrated by the instructional material and lectures. The subjects ranged in age from 22 to 47 years old with a modal age range of 22 to 25.

The sample was nearly half male and half female.

Materials

Several laboratory exercises had been developed by instructors of the introductory statistics courses to give students practical experience with course material. Some of the exercises involved developing the concepts which had been covered in class, and others included the working of numerical problems. For the present study the laboratory assignment covering the concepts underlying an intuitive approach to regression using the least squared solution based on the discussion in Chapter 8 of Glass and Stanley (1970) was employed. As they read the material, the students had to perform exercises designed to illustrate the points covered. For example, they had to write the equation for a regression line which was formed by five points distributed along a straight line on a cartesian graph, and to compare the sum of the squared errors obtained by fitting a line using the least squares method with a line that was fitted visually. The laboratory was designed so that questions requiring written work appeared after each paragraph. By inspecting a student's lab, one could easily see how many paragraphs of the exercise had been completed. Nothing in the laboratory exercises would suggest that these exercises were any different in purpose or format from those previously used in class. However, a cover page was added to establish the three disclosure and two consent conditions investigated in the study.

A short quiz containing ten questions about the material covered in the lab exercises was designed. The quiz was used to estimate how well the students learned the material in the laboratory exercise. The

maximum score on the quiz was 10 items correct.

Procedures

Subjects were randomly assigned to one of the three disclosure conditions and two consent conditions by the distribution of materials. Subjects in Disclosure Condition 1 read an introductory paragraph telling them that they were about to take part in a study the purpose of which would be explained to them after the study was concluded. Disclosure Condition 2 subjects read an introductory paragraph which informed them that they were about to participate in a research study the purpose of which was to see whether statistical regression was learned more effectively using a primarily algebraic or primarily geometric approach. Thus, there was an implication that there were two different sets of reading materials and that the purpose was to compare them. Both implications were deceptions. In the third disclosure condition, subjects were told that they were about to do one of the statistical laboratory experiences that they had been doing all semester. They were led to believe that the exercise was similar in nature and purpose to other laboratory assignments they had performed previously.

A statement on the introductory page also established the consent condition. About half of the subjects were asked to check (yes or no) whether they found laboratory exercises in statistics useful. The material on the front cover sheet was designed to appear identical for the three disclosure and two consent conditions so that without actually reading each others' materials, subjects would not be aware of the differences. All subjects were told after the material had been distributed that they

would be asked to complete the laboratory exercise in simple regression and to take a short quiz. The regular class teacher distributed materials, collected the data, and administered the lab. The subjects worked the lab material and took the ten-minute quiz during a fifty-minute class session. Afterward they were told the purpose of the study and later were briefed on the results. The number of paragraphs a student read (recorded by determining the number of questions answered in the laboratory exercise) and score on the quiz constituted the two dependent variables.

Results

Only three subjects from the group from which consent was asked did not indicate a willingness to participate. Their data was not included in the analysis. The remaining subjects either were not asked for consent, or gave it. Thus, in the subsequent analyses in this section, the consent variable contains these two levels. It should be added that of the three who did not give their consent, two came from the disclosure level which provided only the information that the subject was participating in an experiment (Disclosure Condition 1). The third came from the group that was told that they were doing a lab exercise (Disclosure Condition 3).

Because there was a significant but moderate correlation between the number of paragraphs read and the score on the posttest (r = .42), a multivariate analysis of variance was performed. First the effect of the number of paragraphs read was entered first followed by test score. Then the analysis was reproduced in the other direction, with test score taken out of the number of paragraphs read. Results are shown in Table 1. It

can be seen that there were no significant main effects or interactions for disclosure or consent.

Insert Table 1 about here

In addition, since the unequal cells sizes can induce a dependence in the tests of the effects, reordering of the tests was done. The results of the reordering is also indicated in Table 1. From Table 2, it can be seen that none of the cell means strongly suggested effects under any of the circumstances explored. This is obvious from the test score means, and the barely noticeable effect of adjusting cell means by number of paragraphs read.

Insert Table 2 about here

Discussion

The non-significant results obtained from the multivariate analysis of variance suggested that different conditions of informed consent have little if any effect upon performance. It thus seems reasonable that, short of providing experimental subjects with full information about the expected outcomes of the experiment as done by Resnick and Schwartz (1973), providing subjects with the information that they are participating in an experiment should not be objectionable to researchers. That is, it appeared as if subjects who knew they were subjects, even though they may have been deceived, did not perform very differently from subjects who did

not realize that they were taking part in an experiment. This is contrary to what has been considered to be the case (Weber and Cook, 1973). However, there is other experimental evidence which supports the present findings (Dolly and Meredith, 1976).

Although the group that was asked to give and provided consent in the present study cannot be considered analogous to volunteer subjects in the strict sense, their performance raises questions about some of the popular beliefs of the performance of volunteer subjects. The insignificant differences in performance between those who provided consent and those who did not suggests that research done on volunteers may be more generalizable than previously thought to be the case. However, an alternative explanation might be sampling artifact. That is, since all of the subjects were graduate students in a course designed to fulfill degree or certification requirements for a course in quantitative research methods, there may have been a high proportion of "potential volunteers" in the sample. The only difference, therefore, between the consent group and the group that was not asked for consent was the checking of a box indicating consent to participate. According to this explanation, the subjects in the present study were, for the most part, members of the subgroup within the population who would volunteer to be subjects in research projects. From this interpretation it would follow that the lack of significant differences between the consent group and the other group implied that providing consent does not affect performance of volunteers. However, it may not suggest anything about the relative performance of volunteers and non-volunteers in research investigations.

On the basis of the present data, some of the traditionally held beliefs about the social psychology of research with human subjects can be regarded from a new perspective. That is, influences, such as demand characteristics (Orne, 1972), may be best controlled through design of the experimental setting and treatments rather than focusing on the volunteer status of the subjects or the level of information that subjects have about the experimental manipulations. This kind of speculation provides fertile ground for further research into the social psychology of experiments which use human subjects.

In summary, the present researchers did not obtain differences that they had expected based upon their prior teachings in the social psychology of research with human subjects. The results, despite their preliminary nature, might serve to relax some of the fears that researchers hold about the new ethics of research with human subjects. Moreover, one is reminded of Schelling's (1975) observation that most social science research is innocuous in that it does not seek to violate the Constitution, i.e., personal privacy or welfare. Rather, it typically seeks to investigate important questions relevant to society. For this reason a hardline by the research community or the community at large concerning strict adherence to research ethics or principles will probably be inappropriate. On the one hand, strictly interpreted rules and legislation will almost certainly have a limiting effect on the research that is done. On the other hand, evidence is becoming available that certain information may be provided to subjects without seriously effecting their performance. Further, the results of the present study suggested that subjects who

consent to participate in an experiment may not be substantially different from those who do not. Thus, Gergen's (1973) caution that investigations of the effects of informed consent and disclosure be conducted before the behavioral research community objects to these principles seems cogent.

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Table 1

Consent by Disclosure Multivariate Analysis of Variance of Test Score and Number of Paragraphs Read

Source of Variation	df	Multivariate			Univariate				Step Down			
					Test Score		Paragraphs Read		Test Score/ Paragraphs Read		Paragraphs Read/ Test Score	
		F	df	P	F	P	F	P	F	P	F	P
Number of Paragraphs Entered First												
Disclosure (Total	2	1.18	4,154	.30	1.64	.21	1.64	.20	.61	.54	.65	.52
Pure vs. Explanation	[1]	1.13	2,77	.33	1.79	.18	1.45	.23	.81	.37	.48	.49
Deception vs. others	[1]	1.20	2,77	.31	1.55	.22	1.91	.17	.51	.48	.86	.36
Consent	1	1.71	2,77	.19	2.28	.14	2.64	.11	.79	.38	1.13	.29
Interaction	2	1.52	4,154	.20	1.59	.21	.86	.43	2.21	.12	1.46	.24
Reordered (Test Score Entered First)												
Consent	1	1.78	2,77	.18	2.41	.12	2.71	.10	.85	.36	1.14	.29
Disclosure (Total)	2	1.12	4,154	.35	1.64	.21	1.64	.20	.61	.54	.65	.52
Pure vs. Explanation	[1]	.90	2,77	.41	1.45	.23	1.12	.29	.68	.41	.36	.55
Deception vs. others	[1]	1.36	2,77	.26	1.76	.19	2.16	.15	.58	.45	.97	.33
Interaction	2	1.52	4,154	.20	1.59	.21	.86	.43	2.21	.12	1.46	.24
Within Groups df	78	Univeriate Mean Squares			5.26		6.94					
Total df	83											

Table 2

Means and Standard Deviations of Test Scores

Disclosure	Consent Requested	Mean	Standard Deviation	Cell Size	Adjusted[a] Cell Mean
Partial	Yes	8.24	2.19	17	8.32
Deceptive	Yes	9.14	1.17	14	8.55
None	Yes	6.90	2.60	10	6.86
Partial	No	7.00	1.96	14	7.09
Deceptive	No	7.73	2.28	15	7.79
None	No	7.57	3.18	14	7.95

[a]Posttest means adjusted for number of paragraphs read.

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